

### III. REMARKS

1. Claims 2-7 remain in the application. Claim 1 has been cancelled. Claims 8-12 have been newly added. Claims 2-5 and 7 have been amended.

Support for new claim 8 may be found in the present application at least in Fig. 3, i.e., numerals 40a and 40b.

2. Applicant respectfully submits that claims 2 and 4-8 are patentable over the combination of Chen et al. (US 5,982,804, hereinafter "Chen") and Yamanaka (JP 405021889A) in view of Mochizuki et al. (JP 62237427A, hereinafter "Mochizuki").

Applicant also respectfully submits that claims 2 and 4-8 are patentable over the combination of Fiddymment et al. (US 4,805,184, hereinafter "Fiddymment"), Chen et al. (Electronics Letters, Vol. 32, No. 14, pp. 1288-1290, hereinafter "Chen II"), and Yamanaka in view of Mochizuki.

Each combination of art at least fails to disclose or suggest that each of the absorbing layers comprises a first insulator kept contact with the surfaces of the grooves of gratings; a metal layer contiguously formed on the first insulator; and a second insulator contiguously formed on the metal layer, as recited by claim 2.

The Examiner correctly points out that Fiddymment, Chen, and Yamanaka each fail to disclose or suggest this limitation.

Furthermore, as shown in Figure 1, Yamanaka discloses a semiconductor laser device composed of: a first reflecting mirror layer 2; an InGaAs quantum well 3; a second reflecting

mirror layer 4; a grating layer 5; and a gold electrode layer 6, which are successively formed on a GaAs substrate 1.

It should be noted that Yamanaka's device does not have any grating having a periodic structure in a longitudinal direction of the ridge stripe having a plurality of grooves each extending from side walls of the ridge stripe on flat portions in both sides of the ridge stripe. In contradistinction, in Yamanaka the grating layer 5 is provided at the top of the ridge.

Since the surfaces of the grooves of the grating layer 5 are directly covered with metal, that is, the gold electrode layer 6, in Yamanaka's device, there is no first insulator between the grating layer 5 and the electrode layer 6 as described in the present invention. Moreover, it should be noted that Yamanaka's gold electrode layer 6 is not formed to have a substantially uniform thickness to be conformable to the grooves of gratings. In addition, there is nothing to cover the gold electrode layer 6 in Yamanaka's device.

Mochizuki discloses a light modulating element having a constructional arrangement of a liquid crystal cell. It is noted that such a liquid crystal element is far different from a resonator having a periodic structure, e.g., a distributed feedback laser (DFB-laser) as in the present invention.

In Mochizuki's device, there are transparent electrodes 2 on the opposite surfaces of a pair of the substrates 1 in between filled with a liquid crystal 5. Such transparent electrodes 2 are not made of metal. Mochizuki cannot disclose any absorbing layer i.e., metal layer covering the diffraction grating 8 because light must pass through the device as is clearly shown in Figure 1.

It should be noted that liquid crystal 5 is not formed to have a substantially uniform thickness to make the transparent electrode 2 conformable to the grooves of gratings.

In addition, the aim of the present invention is different from Mochizuki's stated purpose of eliminating the need for a stage for forming an insulating film and to improve the adhesiveness to substrates of the liquid crystal cell.

Accordingly there is no motivation to combine the teachings of Mochizuki with the embodiments essentially taught by either Chen or Fiddymment.

At least for these reasons, Applicant respectfully submits that claim 2 is patentable over the combination of Chen, Yamanaka, and Mochizuki, and is also patentable over the combination of Fiddymment, Chen II, Yamanaka, and Mochizuki.

Claims 4-8 depend from claim 2 and are also patentable over each combination of cited art.

3. Applicant wishes to express appreciation for the indication that claim 3 would be allowable if rewritten in independent form to include all the limitations of claim 1. Claim 3 has been rewritten in independent form, but does not include the exact limitations of claim 1. However, Applicant believes that claim 3 remains patentable over the cited art.

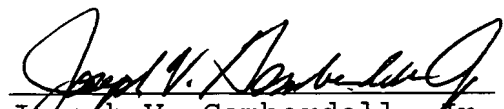
Newly added claims 9-12 depend from claim 3 and are also patentable over the cited art.

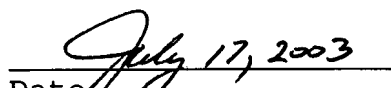
For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record, and

are in proper form for allowance. Accordingly, favorable reconsideration and allowance is respectfully requested. Should any unresolved issues remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

The Commissioner is hereby authorized to charge payment for any fees associated with this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,

  
Joseph V. Gamberdell, Jr.  
Reg. No. 44,695

  
Date

Perman & Green, LLP  
425 Post Road  
Fairfield, CT 06824  
(203) 259-1800  
Customer No.: 2512

#### CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service on the date indicated below as first class mail in an envelope addressed to the Commissioner of Patents, P.O. Box 1450, Alexandria VA 22313-1450.

Date: 7/17/03 Signature:   
Person Making Deposit